CLAIMS

What is claimed is:

1. A propulsion system comprising:

an energy conversion device; and

a fuel delivery system comprising a fuel deoxygenator for removing a portion of dissolved gases from fuel flowing to a catalyst for conditioning the fuel.

2. The assembly as recited in claim 1, wherein said fuel deoxygenator comprises a permeable membrane in contact with fuel flowing through said fuel passages.

3. The assembly as recited in claim 2, comprising a polytetraflourethylene coating disposed on a fuel side of said permeable membrane.

4. The assembly as recited in claim 2, comprising a porous substrate supporting said permeable membrane on a non-fuel side.

5. The assembly as recited in claim 4, comprising a device for creating a partial pressure differential between a fuel side of said permeable membrane and a non-fuel side to draw dissolved gasses out of fuel with said fuel passage.

6. The assembly as recited in claim 1, wherein said catalyst is exposed to a heat producing element.

7. The assembly as recited in claim 1, wherein said catalyst is heated by fuel flowing therethrough.

8. The assembly as recited in claim 1, comprising a housing adjacent said propulsion system, wherein said catalyst is mounted within said housing.

9. The assembly as recited in claim 1, wherein said catalyst comprises a metal.

10. The assembly as recited in claim 1, wherein said catalyst comprises a zeolite.

11. The assembly as recited in claim 1, wherein said catalyst initiates endothermic decomposition of said fuel.

12. A fuel delivery system for a propulsion system comprising:

a fuel deoxygenator for removing a portion of dissolved gases from fuel; and

a catalyst receiving fuel exiting said fuel deoxygenator.

13. The system as recited in claim 12, wherein fuel deoxygenator comprises a permeable membrane in contact with fuel flowing through said fuel passages.

14. The system as recited in claim 13, comprising an amorphous fluoropolymer coating disposed on a fuel side of said permeable membrane.

15. The system as recited in claim 13, comprising a porous substrate supporting said permeable membrane on a non-fuel side.

16. The system as recited in claim 13, comprising a device for creating a partial pressure differential between a fuel side of said permeable membrane and a non-fuel side to draw dissolved gasses out of fuel with said fuel passage.

17. The system as recited in claim 12, wherein said catalyst initiates an endothermic decomposition.

18. The system as recited in claim 12, wherein said catalyst comprises a metal.

19. The system as recited in claim 12, wherein said catalyst comprises a zeolite.

20. The system as recited in claim 12, wherein said catalyst is mounted adjacent a heat producing element of said propulsion system.

21. The system as recited in claim 12, wherein said catalyst is heated by fuel flowing therethrough.

22. A method of inhibiting coke formation of an endothermic fuel for a propulsion system comprising the steps of:

a) removing dissolved oxygen from fuel; and

b) initiating catalytic reactions of the fuel after said removal of the dissolved oxygen.

23. The method as recited in claim 22, comprising preventing the formation of insoluble materials on catalytic material by removing the dissolved oxygen from the fuel.

24. The method as recited in claim 23, comprising heating the catalytic material to temperatures promoting endothermic decomposition of fuel.

25. The method as recited in claim 24, comprising directing decomposition of the fuel toward the formation of preferred combustible products.

26. The method as recited in claim 25, wherein the fuel after decomposition comprises a greater heat sink capability than the fuel prior to decomposition.

27. The method as recited in claim 22, comprising creating a partial pressure differential across a gas permeable membrane to diffuse oxygen from said fuel.

28. The method as recited in claim 27, comprising supporting the gas permeable membrane on a porous substrate and drawing diffused oxygen through the porous substrate away from the fuel.